

# **EXHIBIT 124**

INTERNAL ONLY

Edition #3 is available [here](#)



Global Partnerships, Publisher Solutions & Innovation

# Header Bidding Observatory #1



PSI Global Competitive Intelligence  
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Project team: Nicolas Baquié, Heidi Lackovic, Nancy Yoo  
Competitive Champions: Fabrizio Angelini, Greg Booth, Tiffany  
Chantra, Charles Delattre, Jessica O'Brien, Pauline Peyronnet  
Executive Sponsor: Roberto Ruju


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## Project objectives

- 1. Data insights** - Monitor Header Bidding current adoption by our partners and its evolution
- 2. Competitive Intelligence** - Create a single source of truth on Header Bidding to better monitor our largest competitive threat to AdX
- 3. Narrative** - Empower the partnership teams with compelling stories to counter HB growth on our partner



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## Executive Summary

### Data Insights (Slides 12-20)

- **43%** of LPS publishers are using header tags
  - **AMS** pubs have the highest volume of pubs using HB (66%), **APAC** (28%), **EMEA** (23%)
  - Only **5%** of total **indirect impressions** (Network + Bulk + Price Priority + AdX) are **HB impressions**
  - However, **AdX** has a much higher share at **42%** of total **indirect impressions**
- **OpenX** is the top HB player globally
  - **AppNexus**, **Rubicon**, and **OpenX** are **global** HB players
  - **43%** of publishers using header tags are working with **only one HB provider** (OpenX or Rubicon)
- **AdX YoY growth** for publishers using HB is generally **higher** (74%) than for ones without HB (41%)

### Competitive Intelligence (Slides 23-26)

- In 2016, **AppNexus**, **Index Exchange** and **OpenX** quickly pushed to market, while **Rubicon** was **slower** to move with **Fastlane**. Exchange integrations were for the most part **client sides**, focused on **desktop**
- In 2017, we will see a growing **Facebook** and **Amazon** threat, with exchanges expanding their targeting **beyond desktop** and launching **Server-Side** integrations, which will **compete directly** with AdX

### Narrative (Slides 27-32)

- Most pubs using HB have the line items set up in DFP such that they are in **fair competition with AdX**
- When discussing HB with partners, we want to move away from a unique focus on **HB disadvantages** towards the **advantages** of our **own offering**: the combination of DA and Optimized Pricing, DFL, and EBDA, with full ad server control

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## What is Header Bidding?

- Header bidding is an **ad mediation technique** where publishers place HTML or JavaScript code in the header of their site to run a **real time pre-assessment** of the value of their inventory before the content of the page loads, and often **before** a publisher's **primary ad server is called**
- This technique goes by various names: **pre-bidding**, **RTA**, **RTP** and more variants used by different providers
- Header bidding **does not replace the ad server**: the creative is served in the usual way through the ad server, using server **line items** and server **tags** on the page
- The change is that the header bidder **targeted line item** is selected by **DFP** if the header bidder replies with a **'yes'** to an impression
- Publishers use it if they want to work with multiple exchanges and check **real time prices** across those exchanges

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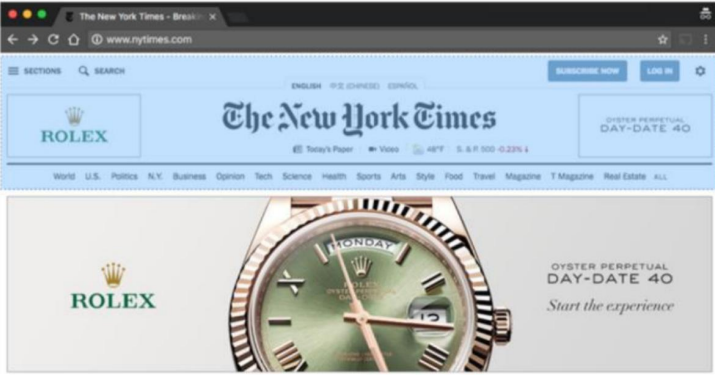
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## How does Header Bidding work? (Web)

- Header Bidding partners are coded into the header of the page  

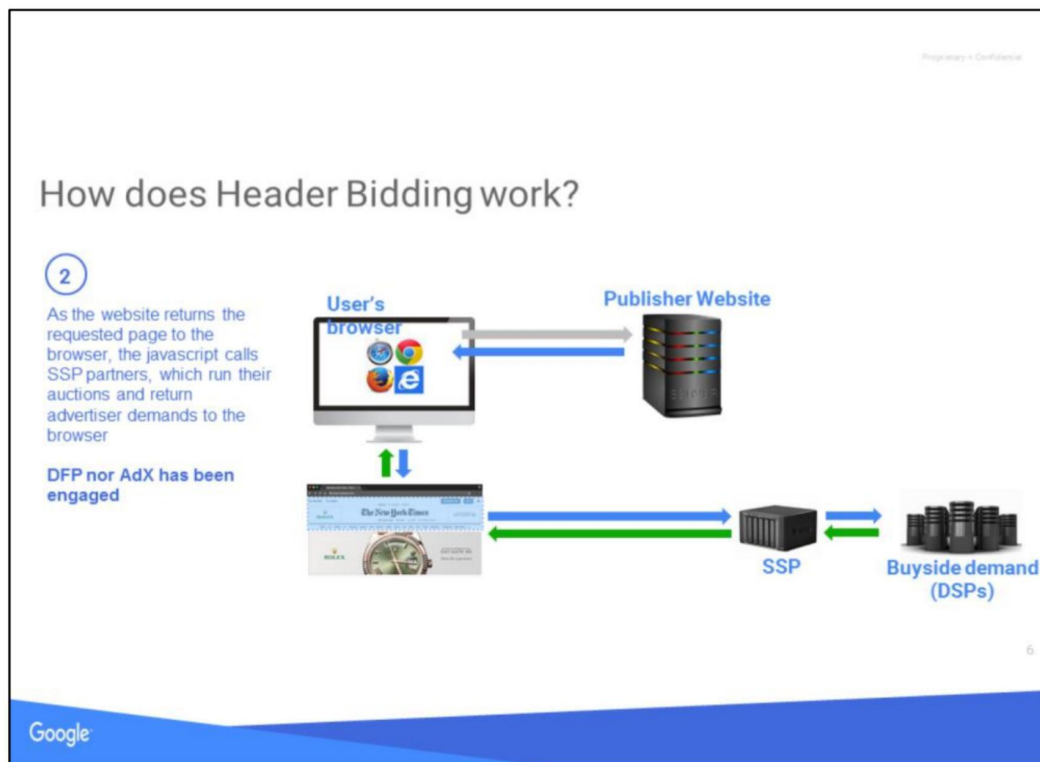
```
<script src="//hb.com/headerbidder.js">
```



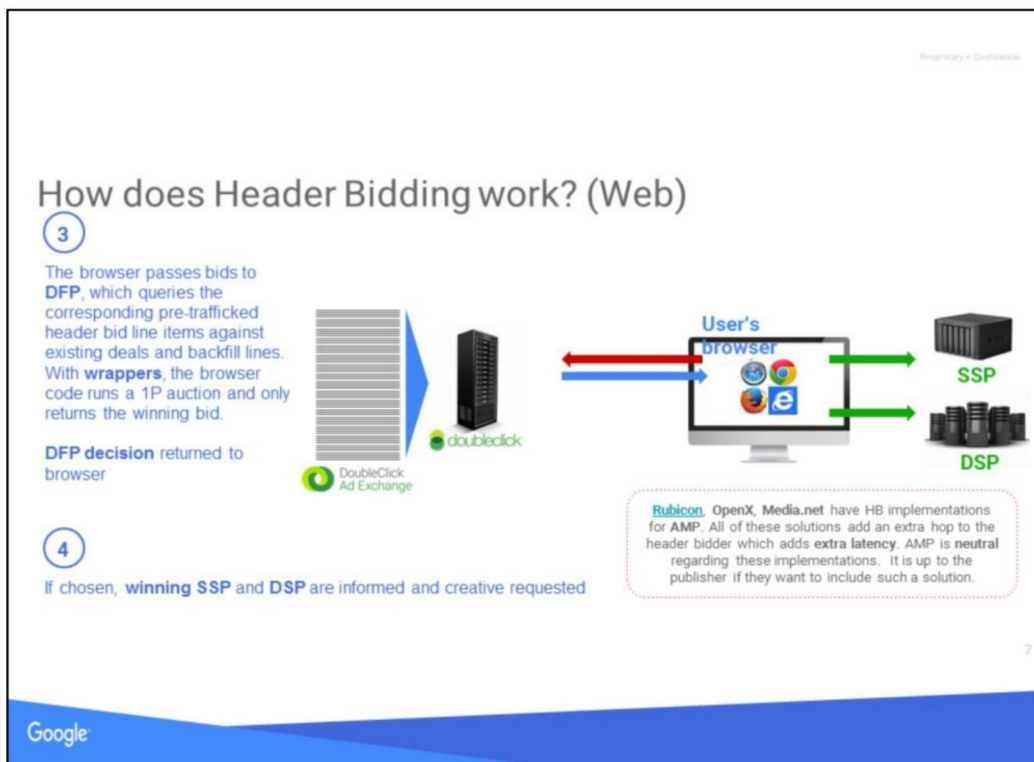
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To enable header bidding, publishers place lines of JavaScript known as header tags in the header section of their webpage for each SSP they wish to include.



- When a user visits the webpage, the JavaScript fires before the browser even notifies the ad server, calling the SSP vendors and allowing their auctions to take place on that impression.
- This means even guaranteed line items haven't seen it yet.
- Enables the true value of that impression to be realised in the open market, rather than offered once direct sales have been satisfied.



- Literally tens of thousands of line items need to be created to accommodate possible responses from the SSPs, which are called when that vendor is selected in the header.
- Often the vendors encourage trafficking line items at sponsorship or standard priority, to help them compete in the DFP decision logic. However this can confuse DFP's delivery forecasting, prevent AdX from competing in DA, and disrupt the 'temporary CPM' standard lines get in DA.
- Recommend to your publishers to place header bid line items at priority 12, which allows DA to be more effective for them.
- In an App environment, the SSP's software development kit (SDK) is embedded in the app publisher's code to allow the SSP and its SDK to do the majority of the work, instead of the publisher's ad server.
- In some SSP/SDK integrations, the SSP has the potential to supersede the ad server as the primary decision and execution engine for managing advertising. Again, such an option could be attractive to a publisher not interested in utilizing an ad server to manage ad inventory.



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## What are the key challenges with Header Bidding?

HB jumps the ad server, so the **browser** is now doing **more work**

- Browser reads JavaScript telling it which partners to contact
- Browser calls the SSPs
- Browser processes returned bids, passing to the ad server line items
- On winning the ad-server decision, browser calls winning DSP and notifies SSP

Which brings **latency** since hard coding into the header means **content loads after all the ad calls are made**

But HB vendors have evolved to create '**wrappers**' (~container tags, in most cases client-side) which

- Introduce a generic line item structure that allows to **scale up the number of participating bidders** without additional complexity
- Manage the **auction in the header**
- **Reduce latency** by making sure ad calls are **asynchronous** and making it easier to set **timeouts**

*\*Example wrappers include AppNexus (creator of open source [PreBid.js](#)), Rubicon, AOL*

Exchanges are also building faster **Server-Side connections** for the header - see [Amazon Spotlight](#)

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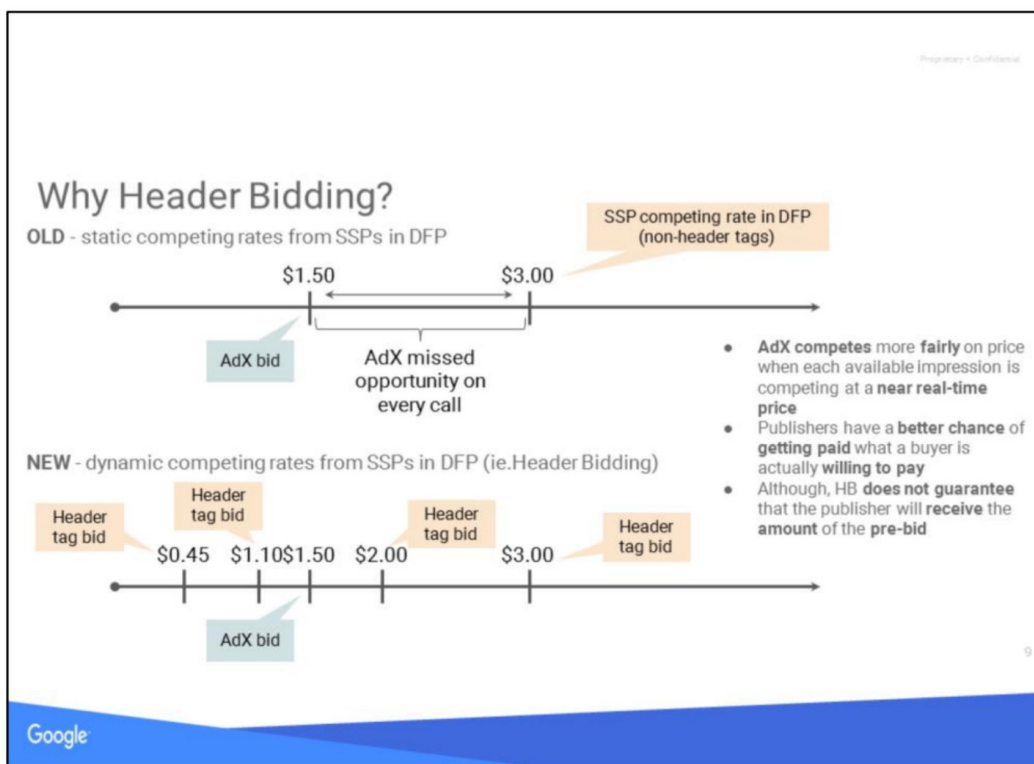
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Survey results from IAB interviews show current split in implementations as (not published yet)

Direct – 34%

Container/wrapper – 55%

Server to server – 11%



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## In Summary: Pros and Cons of Header Bidding

### Pros

- **Revenues**
  - Publisher has a **better chance** of getting paid what a buyer is actually **willing to pay**
  - The mediation network sees **100%** of the publisher's inventory so can **pick** the highest paying impressions and header bid on them
  - SSPs 'compete' against each other rather than be called in a waterfall
- **Vs. Passbacks (waterfall)**
  - No network passback needed (since impression is preselected), so ad serving cost is paid once
  - Only one AdX callout needed to compete with all header bidder line items
- **Multiple SSPs integration**
  - Header bidding makes that a lot easier since you can plug them in rather than have a crazy tiered setup with loads of passbacks

### Cons

- **Increased latency** - especially in mobile and video = decreased user experience, viewability, CTR; Timeouts on HB exchanges significantly higher than DRX
- If a demand partner fails it can block a publisher's site from loading
- **Operational complexity** - Thousands of line items need to be created and managed in order to accommodate possible responses from the SSPs
- **Loss of forecasting integrity in your adserver**
- **Data security/leakage** - You are giving the SSP network 100% visibility of your data, even before you get to see it **and the ability for buyers to cookie users even if they don't win the impression**
- **Eventual loss of advertiser trust in RTB auctions** - header bidding can make buyers bid against themselves running 2 auctions for every impression
- **Loss of creative management abilities.**
- **Significant discrepancies** between HB and DFP reports leading to difficult reporting reconciliation **and risk of bid fraud**
- **Troubleshooting complexity** - will require IT assistance beyond the Ad Ops team

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